The present invention is related to co-pending U.S. patent application entitled "Variable Speed Recording Method and Apparatus for a Magnetic Tape Drive", invented by Beavers et al., and having an internal docket number of 9086/101 and a serial number of 09/176,079, filed concurrently herewith on October 20, 1998, and co-pending U.S. patent application entitled "Fine Granularity Rewrite Method and Apparatus for Data Storage Device", invented by Zaczek, and having an internal docket number of 9086/106 and a serial number of 09/176,015, filed concurrently herewith on October 20, 1998, and co-pending U.S. patent application entitled "Multi-level Error Detection and Correction Technique for Data Storage Recording Device", invented by McAuliffe et al., and having an internal docket number of 9086/102 and a serial number of 09/176,014, filed concurrently herewith on October 20, 1998, all of which are commonly owned and all of which are hereby incorporated by reference.

Please rewrite the paragraph beginning on page 2, line 13 as follows:

As physical limits were encountered in design of such linear tape devices, helical scan tape subsystems evolved to further increase tape medium storage densities. This is a recording format in which a relatively slow moving tape is helically wrapped around a rapidly rotating drum with an embedded record head and read head. The tape is positioned at a slight angle to the equatorial plane of the drum. This results in a recording format in which recorded tracks run diagonally across the tape from one edge to the other. The record head rotates past the tape spanning a diagonal from one edge to the other. As the drum rotates, the record head records another diagonal track with more data. Recorded tracks are parallel to each other but are each at an angle to the edge of the tape. This geometry of discrete sized tracks on the magnetic tape medium allows still higher densities of data to be stored on the tape as compared to older linear (longitudinal) tape subsystems.

Please rewrite the paragraph beginning on page 4, line 1 as follows:

As noted, tracking circuits add significant complexity and associated cost to helical scan tape devices. Some helical scan devices are non-tracking in that they use no such expensive tracking circuits to assure alignment of the heads with the track. Rather, presently known non-tracking tape devices significantly slow the tape speed relative to the drum to permit multiple passes of the read head over the same track. Each pass is at a slightly different longitudinal position on the tape due to the tape movement but because of the slower speed overlaps a portion of the track read by the previous pass. This overlap of sequential passes is often referred to as overscan. To achieve sufficient overscan to assure proper reading of the track by at least one of the read heads, such non-tracking devices reduce the speed of the tape to half of the nominal speed (i.e., half the speed at which the tracks were recorded). This permits a first pass read to overlap a second pass read thereby helping to assure that one of the passes will substantially cover the track width. However, slowing the tape for read operations negatively impacts read operation performance of the tape device.

Please rewrite the paragraph beginning on page 5, line 6 as follows:

Each pair of like-azimuth (like type) heads is separated vertically on the surface of the drum so that each read head passes over a given track with a longitudinal offset relative to one another at nominal tape speed (i.e., at the tape speed used for writing). The width of each head (also referred to herein as head width or gap width) is also selected so as to create an overlap between the two scans of the track by the corresponding two like-azimuth read heads.

Please rewrite the paragraph beginning on page 6, line 32 and continuing through page 7, line 10 as follows:

In a second aspect of the invention, a helical scan drum is provided for use in non-tracking tape storage subsystem. The drum has a first and second

read head on its circumference. The second read head is positioned on the drum such that it overscans a track following the first read head within a single rotation of the drum. Also, the second read head is positioned on the drum such that the area read by at least one of the two read heads covers the area of the track by at least a predetermined coverage threshold value. In certain circumstances such as misaligned tracks on the tape medium, the heads on the rotating drum may read portions of a single track over multiple rotations. Further, if tape speed is slowed by the tape controller, such as when a host computer cannot accept data at full speed, portions on a single track may be scanned multiple times over multiple rotations. Similarly at slower tape speeds each drum rotation may cause the heads to scan portions of multiple tracks. In all cases, the heads are positioned on the drum to assure at least 100% scan coverage of the entire recording area of the tape medium by the multiple heads on the rotating drum.

Please rewrite the paragraph beginning on page 8, line 21 as follows:

As is known in the art of helical scan tape devices, drum 85 is positioned within the tape device such that tape medium 80 typically wraps around between 90 and 180 degrees of the circumference of drum 85. Further, the drum 85 is positioned at an angle relative to the tape medium 80 such that tracks are written at an angle on the tape medium 80 extending from one edge to the other.

Please rewrite the paragraph beginning on page 12, line 5 as follows:

Element 404 is next operable <u>to</u> simulate the reading of a track using the present parameter set. As discussed further herein below, the read of a simulated track by a simulated head is performed by calculating the geometric area covered by the track and the head (each essentially a rectangular area). The geometric area covered by the track and by the head is essentially its present physical position relative to the rotating drum. This is computed from

the provided parameters including the tape speed parameter. The geometric area scanned by the read head is essentially the rectangular area swept by the read head as it rotates on the simulated drum over the present physical location of the track. The overlap between the two rectangular geometric areas, the track area and the head scan area for all heads, determines the success or failure of the read operation as noted below. Element 404 is operable to compute the geometric areas of the track and the head in accordance with the present parameter set.

Please rewrite the paragraph beginning on page 13, line 7 as follows:

As noted herein, each head may provide adequate coverage for portions of a track and not for other portions of a track. Further, each head may cover portions of a track on one rotation and other portions of that track on a subsequent rotation. The combined geometric area, as used herein, therefore means the union of all coverage by all heads over all portions of the tracks. In other words, for each portion of a track, so long as any of the heads of identical azimuth for that track adequately covers that portion, that portion is deemed to be covered by the combined geometric area of the scanning of all heads. If a sufficient percentage of portions of a track are so adequately covered by the combined geometric area of the scanning heads, then the track is adequately covered by the combined geometric area of the scanning heads.

Please rewrite the paragraph beginning on page 13, line 23 as follows:

Element 416 is then operable to determine if more head gap settings remain to be processed as specified by the user supplied parameters. If so, element 418 is operable to increment the IGAP index variable and processing continues by looping back to element 404. If not, processing continues with element 420 to reset the IGAP index variable to zero in preparation for another parameter setting.